

ABSTRACT

Title : Change In Left Atrial Volume and Stretch Related Parameters Immediately After and On Follow Up After Successful Balloon Mitral Valvuloplasty(BMV)

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Background :

Mitral stenosis(MS) is associated with adverse structural and functional remodelling .Assessment of regional left atrial function can provide insight into atrial electromechanical remodelling .There are limited studies published in the literature on immediate effect of BMV on left atrial structure and function.

Aims and Objectives :

This study intended to assess left atrial volumetric, functional parameters by various echocardiographic imaging methods before BMV and immediately following the procedure in patients with moderate to severe isolated MS. The study also assessed change in various hemodynamic parameters immediately following BMV along with follow up assessment of left atrial volume.

Material and Methods :

Fourty Two (42) consecutive patients with moderate to severe isolated MS (Mitral valve area \leq 1.5cm²) were assessed by two dimensional, Doppler echocardiography and strain imaging before and immediately after BMV(\leq 48 hours) and on follow up(6-9 months).Hemodynamic parameters were assessed by mean Left atrial & pulmonary artery pressures and Left atrial to Left ventricular gradient .

Results :

Left Atrial area showed significant decrease immediately following Balloon Mitral Valvotomy (24.33 ± 5.91 Vs 20.65 ± 4.42) $p < 0.001$ while there was no significant difference between immediately post procedure to follow up (20.65 ± 4.42 Vs 20.20 ± 5.01) $p > 0.05$ Similarly Left Atrial volume showed significant immediate post Balloon Mitral Valvotomy reduction (90.75 ± 36.82 Vs 65.53 ± 25.36) $p < 0.001$ while there was no significant reduction between immediate post procedure to follow up period (65.53 ± 25.36 Vs 62.75 ± 30.83) $p > 0.05$.Mean strain at Inter Atrial septum and Lateral wall was reduced before BMV which improved significantly immediately post procedure with median value increasing from 4.08 to 11.38($p < .001$) at the Inter Atrial septum and median value increasing from 1.38 to 6.74 ($p < 0.01$) at lateral wall. There was no significant difference in Ventricular End diastolic strain parameters. There was significant reduction in pulmonary artery pressure immediately following BMV with median value decreasing from 22.5 pre procedure to 10.5 post procedure ($p < 0.001$) . Mean Left Atrial pressure also reduced significantly Along with reduction in Left Atrial to left Ventricular end diastolic gradient. Mean percentage reduction in pulmonary artery pressure in the group with Preprocedure mean pulmonary artery pressure >50 mmHg was higher than the group with pre procedure mean pulmonary artery pressure < 50 mmHg with trend towards significant reduction ($p < 0.05$).

Conclusion :

Left atrial reservoir function improves immediately along with hemodynamic parameters. Patients with higher pulmonary arterial pressures responds better. Left atrial maximum volume reduction occur immediately after BMV with no significant changes at follow up.